

REMARKS

The rejections of Claims 1 and 5 as being anticipated by Pauler under 35 USC § 102(b), of Claims 10 and 16 as being anticipated by Villanyi et al. under 35 USC § 102(b), of Claims 2 and 8 as being unpatentable over Pauler under 35 USC § 103(a), of Claim 3 as being unpatentable over Pauler in view of Otto et al. under 35 USC § 103(a), of Claims 4, 6 and 7 as being unpatentable over Pauler in view of Nagasawa under 35 USC § 103(a), of Claim 9 as being unpatentable over Pauler in view of Wada et al. under 35 USC § 103(a), of Claim 13 as being unpatentable over Villanyi et al. under 35 USC § 103(a), of Claim 14 as being unpatentable over Villanyi et al. in view of Otto et al. under 35 USC § 103(a), of Claims 15, 17, 18 and 19 as being unpatentable over Villanyi et al. in view of Nagasawa under 35 USC § 103(a), and of Claim 20 as being unpatentable over Villanyi et al. in view of Wada et al. under 35 USC § 103(a) are traversed. Reconsideration of each of these rejections is requested in light of the above amendments and following remarks.

The linchpin of the several rejections is their reliance upon the Pauler and Villanyi et al. documents alone or in hypothetical combination with other documents. Therefore, it is sufficient, for simplification of the issues, to consider the differences between those two references and the present invention as set forth in Claims 1 and 10 to demonstrate why the present invention is both novel and obvious.

Applicants discovered that by providing the R-portion (see page 9 of the Reply filed June 9, 2003) only at the side outside the sealing member to which

the higher pressure is applied and the edge provided at a side to which the lower pressure is applied, it is possible to prevent the sealing member from being broken by the higher pressure and also to prevent the sealing member from being separated from the retaining member by the reciprocating movement of a plunger. They recognized that in the boundary between the retaining member and the sealing member, a force separating both members from each other at the boundary surface occurs not only due to the pressure of the fluid applied from outside of the sealing member, but also the friction force accompanying the reciprocating movement of the plunger. Applicants found that it was disadvantageous that the boundary surface and the retaining member be just an edge with the R-portions at both sides thereof as there is a possibility of breakage of the sealing member because of the adhesion between the retaining member and the sealing member deteriorating due to reduced lubrication performance. Consequently, increasing friction force which accompanies the reciprocating movement of the plunger rod tends to separate the retaining member and the sealing member at those boundary surfaces which applicants found to be avoided by providing the R-portion only at the side outside the sealing member to which a high pressure is applied while keeping the edge at the side to which the lower pressure is applied.

Neither Pauler nor the Villanyi et al. patent teaches or suggests such an arrangement. In the Villanyi et al. sealing system, for example, all the corners of the retainer member are constituted as an edge in contact at a side of the sealing shaft portion of the retainer and the seal. That is, there is no teaching or

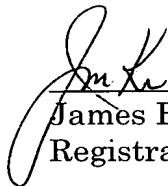
suggestion of the R-portion being provided only at the higher pressure side than at an edge provided at the lower pressure side as set forth in the claims. The same is true of the Pauler sealing ring arrangement.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #05620350347).

Respectfully submitted,

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